

NEW DIMENSIONS
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ADMINISTRATIVE IMPROVEMENT

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BY

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NEW DIMENSIONS IN ADMINISTRATIVE IMPROVEMENT

(I) MANAGEMENT & ORGANISATION*

The problems of administrative improvement in India are larger and more complex than in nearly every other country in the world. First, there is the matter of sheer size and diversity of population. Forty-five crores (450 million) of people, most of them still illiterate, are participants in the present great Indian effort for self-improvement. They speak many different languages; they are separated by great distances and inadequate transportation links; they hold many different religious beliefs; many of them suffer from inadequate food; the environment dooms many to early death; and the strong forces of tradition and habit enforce the continuation of practices which are no longer pertinent to contemporary reality.

In spite of many handicaps, the people of India are making progress in their struggles to improve the general welfare. In their efforts, they are immeasurably aided by the great inventions of the Industrial Revolution. But in the future, they will be more benefitted by new research discoveries of the "Scientific Age" into which civilization is now evolving.

The changes in the material welfare of mankind have been larger during the past two centuries of the Industrial Revolution than in all previous recorded history. But the improvements which will be generally available to mankind in the next forty years will far surpass all those of the past two hundred years; and the main burden for transferring scientific discoveries into large activities for the benefit of the world's citizens will fall heavily on the shoulders of the administrators—both those in government and those who

*Text of the first public lecture delivered on March 20, 1962, at the Institute.

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will be leading the great industrial, commercial, agricultural, and educational institutions of the world.

The main themes of this essay are the great scientific discoveries which are now increasing so rapidly in all parts of the world and the large problems of management and organisation which are being created by these discoveries. The following essay on "The Audit of Performance" deals specifically with the kinds of action leaders must take to improve the general levels of administration in order to equip their nations to gain maximum benefit from these great new discoveries.

A. DEFINITIONS

It may be useful here to advance a definition of the words "management" and "organisation". Unfortunately, the literature on public administration suffers from lack of precision in the meaning of words. Aside from differences in meanings among countries, it is impossible to obtain consensus in any one country. The word "management" is an example; in one unpublished American dictionary on public administration, the author lists 41 definitions of the word.

For the purposes of this essay, "management" is defined as the responsibility for (a) participation in the formulation of policies and goals, and (b) participation in directing the activities of people toward achieving policy objectives and goals. Within this definition fall the responsibilities of prime ministers, presidents, cabinet ministers, secretaries, department heads, division chiefs, and section heads. Their total responsibility is to formulate policies and to do their best to see that the activities of organisations achieve the policy objectives.

"Organisation" is defined as two or more people (or entities) who combine to try to achieve one or more objectives.

In both India and the United States, there is much popular distrust of government dating back to the times before independence when the British were rather benevolent, but very much unappreciated rulers. One of the

American "founding fathers", Thomas Jefferson, observed "that government is best which governs least". In the American popular mind, governmental service has traditionally been associated with political spoils, or at best, service which sincere but mediocre persons could perform. And in India today, it is rumoured that much of the public service, excepting in the upper levels, is having some problems in competing with commerce and industry for able young men.

The cult of belief that government service is intrinsically and irretrievably inefficient has been strengthened in recent years by a delightfully humorous essay—"Parkinson's Law":

"work expands so as to fill the time available for its completion".

"...it now becomes possible to state Parkinson's Law in mathematic form. In any public administrative department not actually at war the staff increase...will invariably prove to be between 5.17 per cent and 6.56 per cent, irrespective of any variation in the amount of work (if any) to be done".

This "law" which was conceived by a professor of history vacationing on a seashore beach in Thailand, seems to have captured the imagination of people the world over. Administrators who have heard there is such a "law" but haven't read it, wonder what great wisdom they are missing. Although seasoned administrators recognise this so-called "law" as a fraud, a surprising number of people who should know better are misled by this bit of nonsense. (Even libraries classify the essay under "administration" instead of "humour".)

The truth is that in many countries, including India and the United States, government has been getting better as it has become bigger. The number of professionally trained officials and skilled career employees in government has been growing rapidly; and their ethical standards and devotion to the public service seem to be improving with each decade. While it is true that many governmental organisations are characterised by delay and general inefficiency,

it is equally true in both India and the United States that the best governmental organisations are as efficient and effective as the best private organisations in the world. An overriding problem in both countries is to improve the general efficiency of all of the public services so it approximates the quality of the best organisations.

Improvement in organisations is first and foremost a matter of applied common sense; much of life itself consists of the continual effort of individuals to improve their environment and even themselves. But administrative improvement in the modern world involves something more than the ordinary common sense of the average untrained person.

In modern complex organisation, specialised knowledge *plus* common sense are required to achieve desirable improvements. Therefore people who have specialised in the problems of organisation, management procedures and methods are hired by large organisations to assist in rationalizing and simplifying activities. Indeed "Organisation and Management" (O & M) work is so specialised that in many places analysts become expert in only one or two aspects of administrative improvement—for example, in fiscal management, personnel management, records management, traffic management, chemical laboratory management or dental management. There are methods specialists who concentrate exclusively on visiting dental offices instructing dentists in the newest techniques for repairing teeth. In a field in which new equipment and methods have enabled dentists to double their productivity in the past decade, O & M in the field of dentistry is a small but highly profitable business; for no good dentist can afford to neglect training in the newest techniques.

In the highest sense, the analysis of management and organisation is much more than the improvement of methods and procedures. It is also the careful analysis of the structure and distribution of authority at the top levels of organisations. The best known O & M person in the United States is ex-President Herbert Hoover, who devoted five years of his life between 1947 and 1957 in leading two

major studies on the Re-organisation of the Executive Branch of the Federal Government. A three-foot bookshelf of Hoover Commission reports was prepared and presented to the American national Congress and over 400 major recommendations for improvement were put into effect.

B. ESSENTIAL CONDITIONS FOR RAPID IMPROVEMENT OF ADMINISTRATION

There are a number of conditions which are essential to the rapid improvement of administration. A tentative list of these conditions or "axioms" for the ideally effective organisation is presented herewith.

1. *Responsibility for efficiency and effectiveness.* In each ministry, department, division, office, section, development agency and company the top person assumes active responsibility for the efficiency and effectiveness of his organisation. Even for the highest officials, this means they must give some personal time and attention to the operational, procedural, and morale problems of their organisations.

2. *Administrative ethics.* The top person in each organisation unit assumes personal responsibility for inspiring the employees about the importance of the work of the organisation and for assuring that each employee understands the significance of his own efforts. Each administrator and manager conducts himself in such a manner as to inspire the respect and confidence of those in his organisation.

3. *Organisation and management staffs.* In large organisations, staffs of full-time specialists in work improvement are maintained. The staffs are manned by people who possess these qualities: resourcefulness, energy, patience, tact, basic humility, and special skill in the techniques of O & M. In small organisations not having access to O & M staffs, leadership sponsors a continuing effort in organisational self-improvements, using published standards of quality and quantity as a means of determining satisfactory levels of productivity.

4. *Operational goals.* Reasonably attainable operating goals are established, including quantity and quality goals for the organisation as a whole and for each unit within the organisation.

5. *Individual responsibilities.* Reasonable standards of performance for each employee are maintained, including standards for both quantity and quality of work performed.

6. *Operating reports.* A system of periodic, prompt operating reports is maintained which compares actual production results with planned performance; it also compares the organisation's activities with the activities of similar organisations.

7. *Employee participation ("participative management").* At each level in the organisation, leadership makes sure that the employees participate in the establishment of goals and standards, in the review and evaluation of performance, and in planning for eliminating weaknesses.

8. *Opinions of those served by the organisation.* At frequent intervals, appraisal is made of the opinions of those who are served by the organisation, including analyses of patterns of complaints.

9. *Continual corrective action.* Modifications are continually made to maximise effectiveness, including—as the case may require—revision in goals, increase or decrease in number of employees, and in-service training to reduce weaknesses and to prepare employees for changed or new responsibilities.

10. *Productivity improvement.* There is a special continuing effort throughout the organisation designed to improve the organisation's productivity by several percentage points each year.

* * *

These conditions for efficiency and effectiveness are easy to enumerate but exceedingly difficult to achieve. Doubtless no organisation in the world comes close to fulfilling all of them; and most organisations do very poorly indeed. One main problem is that an insufficient amount of time is devoted to systematic improvement efforts. Sixty

years ago the "father of scientific management"—Frederick Taylor—observed that not less than one employee in seven should be engaged in the constructive work of planning, controlling, and improving organisations. With the greater complexity of contemporary administration, at least one fifth of the total time of employees should be devoted to such work, and in some organisations perhaps the figure should be as high as one half.

C. THE VISTA OF FUTURE LARGE-SCALE INNOVATION

Organisational effectiveness as close as possible to the ten conditions discussed above provide essential organisational structure to reap maximum benefits for mankind which the New Revolution in Science is going to make attainable. Unless modern organisations are efficient and flexible in adapting to the needed rapid change, they will not be able to cope with the new, more difficult problems which will face society in every country during the next two or three decades.

The enormous number of new scientific discoveries which will be available for general use by 1970 or 1980 will be much larger than society can absorb. An impression of the size of the New Scientific Revolution may be gained from the following figures. During the century and one half from 1790 to 1940 in the United States the following inventions helped to revolutionize life: the cotton gin, the spinning jenny, the steam engine (railroads and steamships), the telegraph, the telephone, the incandescent light, the radio, the bicycle, the automobile, the airplane; and in medicine, anaesthesia, inoculation to prevent communicable disease, and general surgery. The estimated total expenditures for scientific research and development in the United States during this 150-year period by such scientists and inventors as Alexander Graham Bell, Thomas Edison, Henry Ford, the Wright Brothers and thousands of others were 800 crores of dollars (eight billion dollars). In the one year 1962, nearly twice this amount will be spent in the United States for research and development and in the decade 1961-70 an estimated 20,000 crores of dollars

(200 billion dollars) will be expended. This represents an average annual expenditure in this decade of 375 times the average in the first 150 years of United States history.

Although the average of annual expenditures for science from 1950-1960 was far below present levels, the phenomenal number of discoveries during the past decade staggers the imagination. Among the hundreds of recent and probable near-term future kinds of discoveries of vital concern to society and to governmental administrators are the following:

1. *Practical uses for the world's plentiful resources.* The discovery of new chemical processes and physical properties are opening up possibilities for the use of plentiful resources to be used as substitutes for materials which are in scarce supply. The uses of sand for plastics and for heat-proof glass, and the use of lignite in place of iron ore are examples. Automobile bodies of plastic instead of sheet steel, and engines of aluminium instead of iron are further illustrations of this trend.

2. *Sea mining for food and minerals.* The untapped and virtually inexhaustible food resources in the waters of the oceans, and the enormous amounts of gold and other valuable minerals will add immensely to the world's food supply and general wealth when economical ways are found to exploit those vast bodies of water. With the expected doubling of the world's population—from 300 crores (3 billion) in 1962 to 600 crores (6 billion) before the year 2,000—these oceanic supplies, along with other new sources of food will be sorely needed to prevent mass hunger and starvation.

3. *Weather control.* Since the launching of the world's first weather satellite in 1960, meteorologists have added far more to their total knowledge of the world's weather than in all previous history to that date. The present weather control experiments of Americans, Russians and others may well produce new methods which will enable men to reduce floods by reducing rainfall in some areas, and make deserts bloom through artificial redirection of moisture-laden clouds and stimulation of precipitation in other

designated areas. The large number of highly skilled scientists now working on weather control suggests that these efforts are not the work of mere dreamers.

4. *Bio-chemical generation of electrical power.* There may be near-term hope for generation of electricity in small containers of water, containing a special mixture of vegetable or animal materials. On March 5, 1962 the *New Delhi Statesman* reported a laboratory research project in which electricity is being produced from the contents of a test-tube seven inches long. Apparently there is hope that practical uses of this discovery may become available. It is said that this electric power may be cheaper and easier to generate in many places than hydro-electric, steam-generated, and atomic power. If so, it could be of enormous benefit in many communities throughout the world.

5. *Health.* Although dramatic improvements have been made in all branches of medicine and public health, even more improvements are coming. Cures for people ill with the two great killers—cancer and cardio-vascular diseases—will doubtless increase well above their present already encouraging levels. Inexpensive, easy-to-take medicines, many of them in handy pill form, will increase in numbers and be more widely available to all the people of the world. Thus the general health and vigour of humanity should improve.

6. *Microminiaturization.* The mass production of useful products—such as radios smaller than a transistor radio—will become common within ten years; and their reliability against deterioration, weathering, and breakage will be higher than the larger sizes of the equipment which now serve the same purposes. The smaller quantity of materials needed will reduce production costs and conserve sources of supply. With the savings from mass production, the lower costs should bring many present “luxury” products within the purchasing power of tens of millions of people. The large markets for the new products will provide jobs for millions of people.

7. *Electronics.* One great advantage of electronic devices is that there are either no moving parts or few

moving parts. There is little or no friction, so the products last much longer than where motors or engines are used. With the addition of highly reliable components such as transistors and microscopically small solids, the basis exists for useful products which hardly wear out or need repair. The electronic computer may be followed within a few years by electronic refrigerators, heaters, coolers, and stoves—possibly powered by chemical energy or solar energy.

8. "*Bionics*". Research in "bionics" is one of the more fascinating and potentially most useful subjects for administrators. Bionics is a "coined" word which combines "biology" with "electronics". Bionics research is the study of the electronic systems in human and animal organisms which drive and control the bodies of men, beasts, reptiles, fish, and insects. These "closed circuit" systems of bodily control are a thousand or a million times more efficient than the best organisational and mechanical systems yet devised by man in his control of government, business, and society. To the extent scientists can learn more about highly efficient systems created by God (i.e., systems freely existent in nature) mankind may be able to copy part of them, with infinite benefits to itself. Consider for example, the electronic computer. One of the most complex computers in the world costs 8.5 crores of rupees to build (17.5 million dollars) and is housed in a massive air-conditioned building which costs an additional 18 crores of rupees (35 million dollars). Where this expensive computer has perhaps a crore (10 million) of parts, the human brain has 1,000 crores (10 billion) of components. The 1,000 crore units of the human brain are said to produce 500 crores of electrical impulses every second of one's life "in response to information flowing into the nervous system...or in response to nothing in particular, emitting signals spontaneously".* By contrast, the electronic computer is housed in a space many hundreds of times the size of the human brain. Although the computer is highly reliable, very fast, and very useful, it is simple and an "idiot" when compared with the

**Fortune Magazine*, October 1961, page 148 (part of a science article, "Problems, too, Have Problems"), beginning on page 144.

human brain. When scientists and administrators are able to adapt into their work procedures even a small fraction of the efficiency which exists all around us in nature, the improvements in industry, government and society will be fantastically large and beneficial.

9. *Communication (radio, television, telephone).* The kinds of research referred to above indicate that simpler and less expensive means of long distance and short distance communication will be available soon. This will include cheaper and much more efficient world-wide telephone service and world-wide access to human events through radio and television. One should be able to sit in his home in India and watch great events occurring in other parts of the world. He may be able to telephone his friends in any other country as easily as calling anyone in his own city.

10. *Education.* Among the largest group of beneficiaries from the Scientific Revolution may be the hundreds of millions of children throughout the world who may, for the first time, have the opportunity to obtain an education. With the world-wide production of economical and reliable television sets, children in the most remote areas may have the opportunity to see, hear and learn from the most talented teachers using the best of laboratory equipment and visual aids.

11. *Other "gifts of the scientist".* In addition to these discoveries, a number of others of special importance to the villages and cities of India deserve mention. They include: photosynthesis, synthetic food, economical purification of brackish and salt water, wind energy utilisation, and automaton.

D. CAPITALIZING ON THE SCIENTIFIC REVOLUTION—THE ROLE OF GOVERNMENTAL AND BUSINESS ADMINISTRATORS

To assure that the benefits of the Scientific Revolution will be exploited for the human welfare, the political, administrative, and educational leaders of society will have to make large decisions of great significance to mankind. New, practical inventions are being produced at such a fast rate, that great national decisions will have to be made on

what desirable improvements will be attempted and which will be postponed or discarded; for society can absorb only a limited amount of innovation at any time.

1. *Political level considerations*

At least two political level considerations will have to be faced in any country:

First, the role in society of scientists and technical specialists is going to have to be carefully reconsidered. On the one hand there is danger that their usefulness may be restricted by unenlightened political and administrative leadership. On the other hand, there is danger that as they gain prestige from their practical inventions, their influence over non-scientific affairs may become far too large for the good of society.

Second, the resolution of great political, economic, and organisational problems is going to have to be made on the merits of the facts of life in the last half of the twentieth century. National decisions heavily influenced by such obsolete terminology as "socialism", "capitalism", and "communism"—with their attendant biases and emotional appeals—are going to have to give way to decisions based on concepts of society which reflect the realities of modern life.

2. *Administrative considerations*

In administration, new concepts of authority, new methods of decision-making and new procedures for achieving results will need to be adopted by governments and by organisations in both the public sector and the private sector. A major portion of the next essay—"The Audit of Performance"—is devoted to a detailed consideration of these concepts. At this point, however, attention is directed to the startling effects which the invention of the electronic computer is having on administrative organisation and management.

There are many people who believe computers will not be used very much in South Asia in the near future, especially not as devices to improve administration. Recent experience in both the western world and in India suggest that this viewpoint is incorrect. In the United States, for example, the first commercial digital computer was installed by the government in 1951, and it was not until 1955 or 1956 that the utility of the computer in administration came to be understood by many people. But by 1960, the American national government alone had over 500 digital computers in operation and many others on order. This change is only a beginning, but already a revolution in administration has taken place from the top to the bottom of many organisations.

In India, a beginning in the use of computers has already been made. Although the present small number are mostly used in scientific and statistical work, some of them are adaptable to administration. The larger number which are now on order will further increase Indian capabilities in this new field. The number of Indian officials, both in business and government, who are well qualified to apply "computer technology" to administration is growing rapidly; and it is probable that by 1970 or before, the new techniques will be in rather widespread use. Benefits which will accrue to Indian society may be estimated from the following examples from recent American experience.

(a) *Top level administrative decisions.* The head of a large ministry must make a decision on the purchase of expensive machinery costing several crores of dollars. Several similar types of machinery are available, and the minister needs precise information on which type is the best. Ministry officials who are specialists in the machinery, in finance, and in statistics study each alternative type of equipment from many points of view including:

1. Initial cost
2. Useful lifetime
3. Cost of maintenance during lifetime

4. Types, number and cost of manpower required to operate it during its lifetime
5. Comparative level of performance (value analysis).

If the statistician had many years of time, he could possibly work out solutions to these variables with pen and paper. But a recommendation is needed within a few hours or days. The electronic computer, with its great capacity and speed in handling mathematical problems can solve the algebraic equations a thousand times or a million times faster than man. It is also much more accurate. With the precise information before him, the minister is able to make a far better decision than otherwise.

(b) *Size of industrial plants.* A few years ago one of the world's most successful electrical corporations built a new, modern plant with an assembly line a mile long. It reflected the thinking of the industry's best architects and engineers. One or two years later a newly formed group of "operations research" analysts made a study of the overall efficiency of the new plant. They proved that the product could have been produced with an assembly line one fourth the length which had been set up, with capital savings of millions of dollars. The president of the corporation then decided that no more buildings would be constructed until operations research analysts had reviewed the plans.

(c) *Control of capital construction budgets.* A large electrical utility company serving several million customers must add new generating plants at frequent intervals to meet the power requirements of a rapidly growing population. A small staff of employees operate an analogue computer to determine the most economical location and the most economical time to build each plant and the connecting power lines. The greater precision in the use of materials and manpower saves millions of dollars a year in costs.

(d) *Location of manufacturing plants.* A university graduate student was asked to solve the following problem. Should an electrical company with a growing market build a new plant near its new large market, or should it expand its

old plant 1,000 miles away? The graduate student compared land values, taxes, weather, skilled manpower availability, prevailing wages, and other variable factors in the two locations. With the use of a small computer he solved the linear algebraic equations. He concluded that it would be less costly to expand at the home plant, even though the transportation costs would be higher.

Unfortunately, the company had built the new plant in the expanding market area several years before computer planning was available. After the plant was in operation the cost accountants learned that the new plant was much less economical than the parent plant.

(e) *Inventory control.* A large national organisation stores thousands of component parts in warehouses throughout the country. For each component, thousands of items must be kept in storage to meet the needs of the customers. The company buys a computer for ten lakhs of dollars to keep its inventory records. The sales at each warehouse are telegraphed each night to the computer centre where the national totals are balanced against production. By studying the sales trends, the organisation is able to reduce inventory levels by several crores of dollars. Also, production is now geared precisely to requirements, with large savings in the amount of unused component parts. Total savings in a year amount to more than the total cost of the computer.

(f) *Manpower utilisation.* A large national organisation hires several thousand new employees a year. It takes two weeks to match their individual skills against the national list of skill requirements. A computer is purchased, and each evening the skills of the hundreds of new employees is telegraphed to the computer centre to be matched against the skill needs. By the next morning, the matching is completed and each man is assigned to work at a place where his special abilities can be best utilised. The two weeks' saving on each of the new employees amounts to many lakhs of dollars each year.

(g) *Payrolling.* In a small organisation with 4,000 employees, approximately 12,000 pay cheques are written

each month. One typist using a semi-automatic electronic payroll machine writes all the cheques. For each person she types the name, the address, the rate of pay, the number of hours, number of family dependents, and the total pay received so far this year. The machine computes the gross pay, the deductions for state income tax, the deductions for national income tax, the deductions for retirement, and the net pay due. It prints the net amount on a pay cheque which contains the employee's name and address. On an attached tab it prints all the data for the information of the employee.

The process is neat and accurate and the employee receives his cheque in the mail on the morning of the day it is due him. The payroll typist is able to handle about two cheques per minute. The machine automatically summarizes the taxes and retirement amounts, and the organisation pays these totals to the national and state governments. The system is many times as accurate as the older clerical methods of payrolling. So the amount of auditing is reduced to a fraction of that previously required.

(h) *Accounting*. A small store with four thousand credit accounts formerly had one full-time bookkeeper to keep the records. She made many clerical errors. The store hired a punch card service organisation in her place to keep the accounts. The organisation receives an amount equal to one half the former bookkeeper's salary. Nearly all of the clerical errors are eliminated by the verifying system used in the punch card operations. Customers are better satisfied with the more accurate bills, and the sales of the store have increased.

* * *

These examples illustrate the fact that electronic equipment can make administration quicker, more accurate, and much less costly. This equipment does not, however, simplify the work of the administrator and his staff. Indeed, a substantially higher level of knowledge is required. The administrator or decision-maker need not be an expert in the mathematics or the engineering of computers. But

he should have enough understanding of them so he will have a general knowledge of what his specialist staff are doing and the ways in which their skills can be useful to the organisation. As to the computer itself, it is only a complicated adding machine whose reliability is no greater than that of the people responsible for its use.

Fortunately, some of the benefits of computers can be obtained without having to buy or rent them. These benefits are described in the next essay on "The Audit of Performance".

3. Educational and training considerations

Education is the third large area which will require new national decisions in the new Scientific Age, if its benefits are to be properly exploited for mankind. Discussion here is limited to that small phase relating to public administration.

In spite of the rapid growth of the public sector in most countries, only insignificant attention has been devoted to educational and training programmes for improving governmental administration. In many countries, including India and the United States, the private sector has been doing a better job of training its administrators and employees than the public sector. Furthermore, the amount of business administration education in the universities has been much larger and the average quality has probably been at least as good as that in public administration.

University education in public administration needs to be substantially modified and strengthened. Although this is true in both the United States and India, the following paragraphs deal only with India. Most Indian university education in public administration is modelled after American and British courses. Even the best of the foreign courses are prepared for the use of students living in their own cultures. The problems there are different from those in India; the theory and the organisational practices are different; and the meaning of the terminology is just enough different to misguide the novice. For the beginning Indian student in public administration it is possible that foreign books may do him as much or more harm than good. The

need for more good Indian books on public administration is urgent in Indian universities. The ablest administrators and professors have an obligation to contribute to the Indian literature at a rate higher than at present.

A fundamental reconsideration of the course content of university educational programmes in public administration is needed. In the past, good administration was mainly a highly refined art developed primarily through practical experience. Contemporary administration is both an art and a science. At almost every level of administration, decision-making requires increasingly sophisticated combinations of technology, professional knowledge, aesthetic values, and wisdom. Excepting for wisdom, much of the other qualities are based on processes and concepts which are learned in rigorous educational and training programmes. Therefore, university education for public administration needs to include a larger number of technical and professional papers to reinforce or replace some papers now required in the curricula. In planning these changes the advice of the ablest governmental administrators needs to be sought. From the combined efforts of university professors and governmental administrators there should come educational programmes that substantially improve the capacities of youthful graduates to deal with the newer and more difficult problems of administration in the Scientific Age.

(II) THE AUDIT OF PERFORMANCE*

In a paper published in March 1962 by the (Indian) National Council of Applied Economic Research, two predictions are made : first, by 1981 the unemployment problem will have been solved in India, and second, the per capita income will more than double—from Rs. 331 in 1961 to Rs. 792 in 1981.¹ The investment outlay in this twenty-year period will be as follows: in the third five year plan Rs. 12,600 crores; fourth Rs. 18,000 crores; fifth Rs. 27,000 crores; and sixth Rs. 47,700 crores.

Two leading Indians have made the following two observations about these predictions:

- The targets combine desirability and feasibility; the goals suggested in the paper can be realized.
- If there is sufficient determination and the people work hard, the targets can be achieved.

At the annual meeting of the National Council on March 11, 1962, Mr. V.T. Krishnamachari² expressed the view that in order to sustain the democratic way of life in India the goals for 1981 should be even larger than those predicted by the Council. He has a firm faith that the people of India possess the capacity to reach more ambitious levels of well-being.

During the twenty-year period 1961 to 1981, the cumulative rate of economic growth should be about 6 per cent per annum; and the population is likely to increase by more than 2 per cent per annum to a total of some 700 million people. The gross national income will increase from Rs. 14,500 crores (Rs. 145 billion) in 1961 to Rs. 55,400 crores (Rs. 555 billion) in 1981.

*Text of the second public lecture delivered on March 23, 1962, at the Institute.

1. National Council of Applied Economic Research, *Looking Ahead*.

2. President of the Governing Body, National Council of Applied Economic Research; former Deputy Chairman, Planning Commission.

The enormous dimensions of these national goals suggest that maximum efforts to increase productivity will have to be made in all parts of the country—in government, in the public sector, and in the private sector.

In the essay on "Management and Organization", three main ideas were advanced:

- The new Age of Science into which mankind is now evolving promises to present society with a wide range of new inventions and discoveries for improving the human welfare.
- The selection of a relatively small number of important improvements from the vast number which will be available will require statesmanship of the highest order; and the necessary administrative action at all levels of society will require far more efficient systems and procedures than those which now prevail.
- Although the quality of governmental administration has slowly been getting better, the rate of improvement will need to move at a much faster pace; administrators, management improvement specialists, and even professors can all play a role in seeing that rapid change for the better does occur.

DEFINITIONS

The phrase "audit of performance" is not generally used in the American or Indian literature on administration; furthermore, it has no precise meaning for administrators and auditors. Asok Chanda, in his description of the purpose of audit, states that it includes suggestions, wherever possible, on "...ways and means for the execution of plans and projects, with greater expedition, efficiency and economy."³ A similar broad interpretation of the function of auditing prevails in the United States, where the rapidly expanding influence of the professional auditor is the result of two main factors:

- the increasing size and complexity of governmental, commercial and industrial organisations,

3. *Aspects of Audit Control* (Bombay, Asia Publishing House, 1960), p. 26.

—the need for *accountability*—that is, the need for uniform standards for judging the performance of individuals and organisations.⁴

Although in a narrow sense the auditor is a person who checks the work of accountants, in actual practice he also examines the circumstances surrounding expenditures, including value received, procedures used, wisdom of expenditure, and evidence of fraud and corruption. In recent years, as the complexity of administrative and financial problems has grown, auditors have been giving greater attention than previously to objective appraisal of performance. In the American scene “some of the big auditing firms have committed themselves wholeheartedly to the management services field.” For “... many auditors are real experts in some fields—for example, a man who has spent twenty years auditing department stores often knows more about merchandising than some of his clients.”⁵

In spite of the important role which auditors play in providing an independent review of financial and related administrative affairs, they are not in the best strategic position for judging the administrative efficiency and overall performance of organisations. Those directly responsible for administering, controlling and operating organisations usually are in a far better position to make such judgments. In the first place, they have daily access to the range of issues, problems and information of the organisation in which they serve. Second, they are in a position to direct improvements or take corrective action. For this reason, most of this essay deals with the problems of the administrator in making objective *appraisals* of performance and of taking direct action to improve it.

CREATING THE CLIMATE FOR IMPROVED PERFORMANCE

1. *The role of physical and social scientists*

In his Azad Memorial Lectures on “The Gateways of

4. See for example T.A. Wise, “The Auditors Have Arrived”, *Fortune* Magazine, November 1960, especially at pp. 152-153.

5. *Fortune* Magazine, *ibid.*, p. 156.

Human Knowledge" Prof. C.V. Raman⁶ described the marvellous systems of quantum radiation, air pressure variation, and molecules which provide man with visual perception, hearing, and odour perception. The efficiency and conservation of energy of these physical forces may be a million or a billion times better than the best systems of organisation devised by man. To illustrate this point Prof. Raman commented that if a hundred people were all together in a room talking to one another for one hour in loud voices, the amount of physical energy in the variations of air pressure which produce the noise would not be enough to heat a cup of water.

A vast amount of research on nature's systems and its high levels of efficiency is now being conducted by physical scientists. Some of the research has special significance for administrators and administrative theorists. For these studies are beginning to reveal new possibilities for human organisation which will probably revolutionize the administration of government, industry and agriculture within a few decades. Thus, many of the best practices now being used by the ablest of administrators will be archaic within a decade or so as a result of new scientific discoveries.

Indeed, new methods of decision-making being employed in some of the more sophisticated organizations in the world have already created a revolution in the theory and practice of administration.

At a more ordinary level of administrative practice (but within the context of the philosophies expressed by Prof. Raman) administrators in all organisations need to provide enthusiastic leadership for organisational self-improvement. No human organisation is so good as to be above further large scale improvement.

2. Recognition that in an expanding economy like India, increased productivity normally creates many new jobs

The national goal of improving the general welfare by annually raising average productivity is referred to so

6. World renowned physicist; awarded Nobel Prize for physics in 1930. The Azad lectures were delivered on March 14, 15, 16, 1962.

often in the press and radio that almost everyone knows about it and agrees that it is a most desirable objective. But when specific cases arise for increasing productivity in any particular organisation, people begin to worry about unemployment. The more the productivity is increased, the more they worry. And they have seen or heard of enough examples of labour displacement and unemployment to distrust any specific productivity improvements. Nevertheless, it is quite easy to demonstrate that in most cases and for society as a whole, new jobs can be added by increasing productivity, including the automation of factories and offices.

Increased employment through increases in industrial productivity

To the extent that major productivity improvement lowers the cost of any product, there is usually a basis for increasing the volume of sales or services. For many or most products, there are potential buyers at prices lower than the prevailing price. When the cost and price are lowered substantially, the number of additional buyers may become so large that an industry has to employ hundreds or thousands of additional workers in spite of the higher productivity. To the extent that workers benefit from increased productivity through higher wages, their own abilities to enter the market for a larger share of production also grow.

A classic example of increased productivity, increased employment, higher wages and lower prices is the early growth of the Ford Motor Company. At the time Henry Ford produced his first automobile, one could purchase a hand-crafted vehicle for about 10,000 dollars. Only a few very rich men could afford to pay that amount, so there was no automobile industry at all. Ford increased productivity so much by introducing the assembly line, that he was able to sell the Model "T" automobile for as low as 300 dollars. Furthermore, he raised the minimum pay from 2.50 dollars a day to 5 dollars a day. Millions of eager buyers entered the market and a gigantic industry was formed which now produces 60 or 70 lakhs (6,000,000 or 7,000,000) of

automobiles a year in the United States. It employs more people than any other industry.

The policy of the Government of India on productivity and unemployment is reflected in the charter of the National Productivity Council. The policy is that positive measures should be taken by the Government and the employers to eliminate the possibility of unemployment due to the introduction of productivity techniques. Also, the benefits of the gains should be shared with the workers.

Although this policy is only advisory, it is followed in the public sector and by many companies in the private sector. Furthermore, it can be a bargaining point for labour unions.

Increased employment through increases in governmental office efficiency

In large governmental organisations involved in industrial, agricultural or other large scale physical production, the number of employees in the central policy control offices is sometimes less than one per cent of the number of manual workers. Therefore, any basic inefficiency in the central offices may multiply delays and unemployment as much as 100 times. In a recent project in one of the large state governments of India, the administrative and financial officials took nearly eleven months to approve the funds and make them available to the project director. The time remaining in the fiscal year was too short to begin the project, so none of the funds was spent. An untold number of people were deprived of employment and a legislatively approved project was postponed if not vetoed by this bureaucratic delay.

In the administration of the National Water Supply and Sanitation schemes, the system of allocating funds slows down implementation of plan goals and prevents the employment of willing workers. The financial "... procedure adopted results in belated information to the State Governments regarding available funds in any year. This leaves the state public health engineering authority very little time to plan for the projects, procure materials and

incur the expenditure. Most of the state public health engineers feel that they could handle a much larger workload....⁷

IMPROVING PERFORMANCE THROUGH SYSTEM DEVELOPMENT

In spite of a decade of efforts to improve efficiency in government, there are many people who believe the problem of delay is almost as bad as it was at the time of the first Appleby Report in 1953. It is true that approximately seventy Organisation and Management units have been established. But most of these units are not yet staffed with analysts fully trained in the technique of organisation and methods analysis. It is encouraging to observe, however, that the Government now has a small O & M training programme which is being enlarged as rapidly as possible, consistent with high quality educational standards.

Aside from the regular traditional kinds of O & M improvement, it should be possible to make even more fundamental attacks on the large problems of delay and inefficiency. This would require a radical departure from present systems and a virtual revolution in many of the processes of administration. As long ago as the late nineteenth century Frederick Taylor proved to a disbelieving world that increases in productivity of 200 per cent to 400 per cent could be achieved by rigorous application of scientific techniques of management. In recent years Taylor's ideas have been further refined into a concept called "system development". In the development of a system, the activities of a large organisation are studied in great detail by a team of very competent men who judge critically the functions and procedures, and their relationships to the purposes of the organisation as a whole. The team includes people who have a high degree of initiative, originality, skill in the type of activity being studied, and ability to work easily in a group. The team may also include a statistician or a mathematician. In many cases such teams, after a few months of analysis, are able to create

entirely new systems or sets of procedures which increase productivity by one hundred per cent or more.

In one recent case, a system development team spent three years studying the operations of a large organisation of several thousand employees. Although the organisation had a reputation for high level efficiency, the team was able to prove that from 25 per cent to 75 per cent (large variations among the many sections) of the clerical activities of the hundreds of employees was unnecessary. The purpose of the study was to provide a basis for installation of a digital computor to handle most of the routines of administration. A computor was installed, but even if it had not been, the system study would have repaid its cost several times annually in reduced clerical costs, reduced delay, and improved accuracy of work.

Other comprehensive organisational analyses similar to "system development" are "operations analysis", "operations research", and "information research". The teams of analysts may include physicists, chemists, engineers, psychologists, sociologists, mathematicians, statisticians, administrators and other well-qualified people. The composition of any team is determined by the nature of the organisation and the complexity of its problems. The purpose is to maximize the efficiency of an activity to the highest possible level within the collective skills and creative capacities of the team participants. It may be noted that for many non-technical organisations, skilled specialists may not be needed on the teams; rather the members' qualifications are more those of common sense, creativity, and ability to work in a group.

In India, steps have been initiated in a few organisations to introduce comprehensive, systematic analysis of operations. One large corporation in the private sector has set up a unit called a "management research cell" to do some of these newer kinds of studies.

IMPROVING THE QUALITY OF ORGANISATION AND MANAGEMENT ANALYSIS

In well-run organisations, the processes and procedures are much more than applied common sense. They are

carefully thought-out systems of work, which embody a wide range of technical concepts and skills. Thus many organisations fail merely because their work procedures are not at a precise enough level of efficiency.

Sound training in organisation and methods analysis requires careful and rigorous attention to technique and to detail. In recent months, the O & M Division, the Special Re-organisation Unit, and the Committee on Plan Projects have completed a training manual on O & M, or "administrative research". The manual is one of the better study guides available anywhere on this subject. When it is formally published and becomes generally available, it could be of use not only in India but in many other places in the world.

Because it is desirable for more people to have at least a conceptual appreciation of the importance of O & M technique, the titles of fourteen chapters of the manual are herewith listed:

1. Introduction to administrative research and work study
2. (a) Scope of administrative research
(b) Administrative survey methods
3. Elements of administration
4. Organisation analysis
5. Methods analysis (methods study)
6. Work measurement
7. Statistical approach to administrative problems
8. (a) Forms analysis and control
(b) Space lay-out and utilization
(c) Record management
9. Project preparation and analysis
10. Programme planning and evaluation
11. Inventory control
12. Cost reduction and investment decision
13. Job enthusiasm
14. Conference technique

IMPROVING PERFORMANCE BY INCREASED USE OF STANDARDS

Another highly significant governmental improvement effort is the work of the Committee on Plan Projects in devising and promulgating a wide range of standards for use in projects under the five year plans. Within the period 1958-1961 the Committee has published about a dozen basic research studies on these subjects. They include reports in the following categories of development administration :

1. Construction standards for several major types of buildings, including multistoreyed buildings, schools, residential buildings, and small industrial buildings. The reports also cover rehabilitation of slum buildings and standards for slum clearance.
2. Inventory control and storage structures.
3. Tubewells and minor irrigation.
4. Water supply and sanitation.
5. Production control technique ("line of balance technology").
6. Inventory management—including handling and storage.
7. Maintenance.
8. Basic scheme of cost reduction in construction.

These reports, most of which were completed in 1961, contain frank and uninhibited descriptions of enormous losses due to poor standards and faulty procedures during the first and second five year plan periods. More important still, the reports provide a wide range of performance standards which are realistic and easy to understand. Inasmuch as over fifty per cent of all development plan costs are on programmes covered by the standards, there are potential savings of crores (tens of millions) of rupees a year if the standards can be rigorously enforced.

Inasmuch as the effective use of construction resources is so large a problem in other nations of the world, these standards can serve a beneficial purpose in many places outside India.

IMPROVING PERFORMANCE THROUGH INTENSIVE ORGANISATIONAL SELF-ANALYSIS

1. *General self-evaluation analysis*

Most students of administration would agree that the members of an organisation are the best possible source of information about it. Collectively they know far more about its strengths and weaknesses than people outside the organisation. They are also aware of many ways to make the organisation better, although they may take no positive improvement action. In recent years, this great resource for possible improvement has been drawn upon by many progressive organisations. Employees from the top of organisations to the bottom usually respond favourably to the challenge to participate in the improvement of their organisations. In industries, governmental organisations and universities the "self-survey" or "self-evaluation" is increasingly being used to bring about substantial changes. For large organisations the self-survey is not a short and easy exercise. Two years or more are usually needed to study the problems, initiate suggestions, decide on what changes to make, and put them into effect. Inasmuch as the employees themselves are the source of the ideas for improvement, they understand the implications and difficulties involved in making the changes; and they work purposefully and even enthusiastically to put the changes into effect.

For many types of organisations standard sets of questions are available to guide employees in thinking through the problems. The Indian Institute of Public Administration maintains sets of the questions used by the State of Minnesota and by a large association of colleges and universities in the United States. Although these questions could not be used directly in any Asian situation, they provide general ideas which would be useful to anyone who might initiate an organisational self-survey.

2. *"Work simplification" for supervisors*

Within the past twenty years, a sort of mass movement has been started in some countries to train all bottom level

supervisors in methods of work improvement. Each supervisor receives a short-term in-service training course in the simpler techniques of O & M. He learns how to measure the work of each of his subordinates. He learns how to distribute the work equitably, how to simplify work methods and procedures, and how the flow of daily output is controlled. One of the training course requirements is that he submit to the class at least one practical suggestion for improving the efficiency of the work in the section he supervises.

Many large organisations require that all supervisors take the work simplification course. In one of the largest agencies in the United States national government over 150,000 supervisors have been trained in work simplification in the decade 1952-1962. They have submitted over 80,000 acceptable recommendations for improvement. The savings resulting from these recommendations are estimated to be nearly ten crores (one hundred million) of dollars.

THE ESSENTIALITY OF RIGOROUS OPERATING CONTROL

There is a tendency in many organisations in many countries to overlook the importance of operating controls. In India, this tendency manifests itself in insufficient numbers and substandard quality of middle managers in most organisations; furthermore, there appears to be little effort by top administration to do much about this fundamental defect. Consider the extreme example of 88 miles of railways "...electrified at a cost of Rs. 40 crores out of a planned 1,400 miles, for which the cost was estimated at Rs. 79 crores".⁸ Assuming that the Rs. 79 crores estimate was realistic, what was wrong with the system of operational and cost controls? Could not a system of rigorous controls enforced by competent middle management have prevented this enormous shortfall in meeting project objectives?

Consider by contrast a project in another country which cost the equivalent of Rs. 1,000 crores. A most rigorous

8. H.M. Patel, "Efficiency and Economy—Review of Past Experience", *The Indian Journal of Public Administration*, Vol. VII (July-September, 1961), p. 243.

and detailed system of control was set up for every detailed element of the project. A target of five years was set for completion; it was completed in three and one half years. Although incisive, dynamic top leadership was a main feature of this project, it could not have been done on schedule without a tight system of operational control over the hundreds of thousands of the component elements. It is interesting to wonder whether some of the control concepts of that project would have been useful in the railway building project. Of even greater importance are the following questions:

- Is it possible to reduce the amount of unrealistic thinking in plans, and produce more sound operating plans which reflect the limitations of the real world?
- Would it be possible in the next few years to install hundreds of project control systems which regulate the use of men and materials pursuant to established plans, and at costs which are predetermined?

For the enforcement of project plans a large number of administrators and managers are needed:

- who assume responsibility only for work they can reasonably be expected to complete.
- who assume responsibility for the organisation as a whole, rather than giving primary attention to the parts which are of personal interest.
- who recognise that an order given by a superior is not necessarily an order received and acted upon by a subordinate; who know, therefore, that rigorous systems of follow-up are essential.
- who recognise the importance of the time factor, and who use systems of scheduling to meet deadlines and target objectives.

THE CO-OPERATIVE ROLE OF THE INDEPENDENT AUDITOR

The systems of improvement, training and controls suggested in this essay are large in scope, complicated, and difficult to achieve. Nonetheless, they are essential ingredients for successful economic development administration;

and it is the operating officials, and not the auditors, who are responsible for these ingredients. No group of auditors, whether they are maintained within an organisation or are independent outsiders, can possibly deal with the large array of processes which constitute effective performance.

As organisations improve in quality, however, many of their smaller weaknesses disappear and the need for detailed audit review decoines. In these circumstances, the auditors can devote more time to the larger problems of performance improvement and thus make major recommendations for further increasing the tempo of self-improvement. It is to be hoped and assumed that this will occur in India during the next two decades.

POPULAR FRANCHISE—"THE ULTIMATE AUDIT"

One of the most impressive phenomena of modern India is the great national elections. The enthusiastic expression of the right to vote by millions—all the way from the Prime Minister to old, crippled people who have to be carried to the polls—provides the power basis for humane government as well as good administration. The illusion that monolithic governments and police states are more efficient than popular democracies has deluded many people. Administrative studies of many such governments—including Hitler's Germany—have proved that much of the administration is more inefficient and corrupt than would be tolerated in democratic societies. In Nazi Germany, for example, forces of secrecy and the police served the personal purposes of powerful and selfish individuals more than they served the welfare of the country.

The power of the people to elect or to defeat any political leader is a healthy force in any society. Coupled with freedom of expression, including freedom to criticise any leader and any programme, the power of the ballot is the basis for both good government and efficient administration. Only within the controls of a genuine people's audit, do audits by skilled accountants and management improvements by skilled administrators attain their optimum value.

